

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 30 SEP 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE A Chiometer and a New Winch for SWIMS3				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Washington, Applied Physics Laboratory, 1013 NE 40th Street, Seattle, WA, 98105				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 2	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

A Chiometer and a New Winch for SWIMS3

Michael C. Gregg

Applied Physics Laboratory, University of Washington

1013 NE 40th St.

Seattle, WA 98105-6698

phone: (206) 543-1353 fax: (206) 543-6785 email: gregg@apl.washington.edu

Jack B. Miller

Applied Physics Laboratory, University of Washington

1013 NE 40th St.

Seattle, WA 98105-6698

phone: (206) 543-9959 fax: (206) 543-6785 email: miller@apl.washington.edu

Grant Number: N00014-07-1-0929

LONG-TERM GOALS

Our goal is to understand mixing in shallow water, i.e., the upper 500~m, by observing it in relation to the larger-scale processes producing it. Regimes of interest include open-ocean fronts, continental slopes and shelves, ridges and canyons.

OBJECTIVES

This project will add a chiometer to SWIMS3, our depth-cycling towed body, to observe scalar microstructure in addition to the larger-scale variables currently measured. It will also replace the winch used to cycle SWIMS3 in depth.

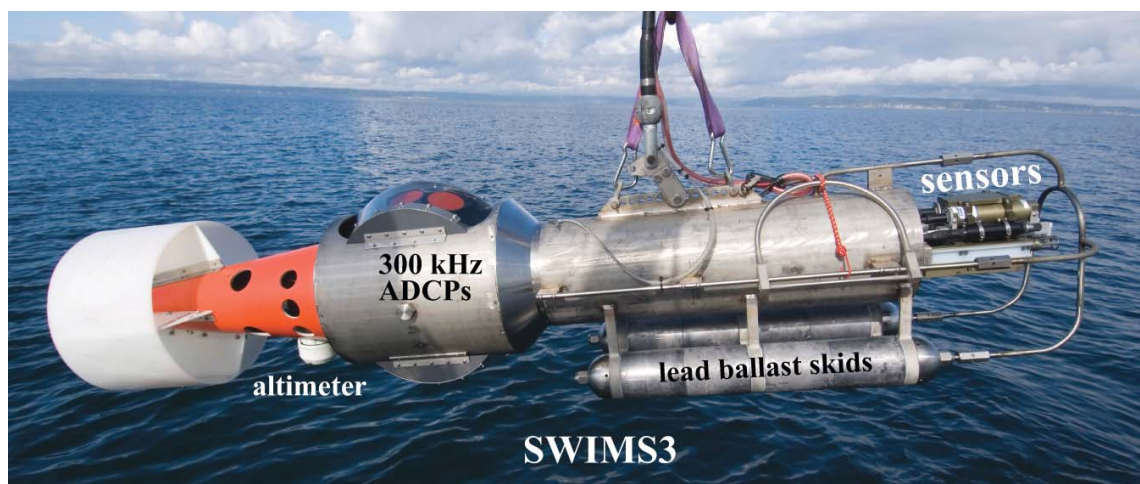


Figure 1. Side view of SWIMS3. Upward and downward 300 kHz ADCPs (Acoustic Doppler Current Profilers) allow measuring currents close to the bottom, where side lobe reflections prevent detection by shipboard ADCPs.

APPROACH

Owing to its faster speed and tighter profiles, SWIMS3 can sample mixing processes much more intensively than can microstructure profilers. We have been estimating dissipation rates using Ozmidov scaling of density overturns. Adding the Chiometer will provide a more direct measure by adding the variance of small-scale scalar gradients to the data suite.

The new winch is needed simply to replace the present one, which we have used since 1993. Because it will carry longer and thicker tow line, it will let us profiler deeper and reduce the chance of losing SWIM3 by cable failure.

WORK COMPLETED

Electronic and mechanical design of the chiometer is nearing completion, as is the analysis to choose the optimum cable size for the winch.

RESULTS

No results have been obtained yet.

IMPACT/APPLICATIONS

The Chiometer is expected to be ready for use in the Mindoro Strait measurements planned for winter 2008 and should be suitable for mounting on Craig Lee's SeaSoar as well as on SWIMS3.